

**AMENDMENTS TO THE DRAWINGS**

Please amend the drawings as follows:

The attached sheet of a drawing includes changes to Figure 7. This sheet, which includes only Figure 7, replaces the original sheet. In this amended Figure 7, the previous amendments of Figure 7 have been removed. Additionally, "Probe Body 750" has been changed to "Probe Body 751" and element number "750" has been repositioned. It is believed that correction of these typographical errors adds no new matter to the application.

### **REMARKS**

This Amendment is filed in response to the Final Office Action mailed October 24, 2007. In this Amendment, claims 1, 3, 5-11 and 13-14 are amended, claims 48-59 are added, claims 4 and 23-47 are canceled and claim 12 is unchanged. Following entry of this amendment, claims 1, 3, 5-14 and 48-59 shall be pending.

In the Final Office Action, the specification is objected to because of an informality, and claims 1-14 and 23-47 have been rejected based on a written description rejection. For the reasons set forth below, these rejections are hereby traversed.

#### **I. SPECIFICATION OBJECTION**

The Examiner objected to the specification amendment of June 6, 2006 as introducing new matter. In an effort solely to expedite prosecution of this application, paragraph 0083 has been amended to remove the previously added content.

Figure 7 has also been amended to remove the previously added matter. Additionally, Figure 7 has been amended to correct two typographical errors found in the originally filed Figure 7. Specifically, "Probe Body 751" from the original Figure 7 has been correctly amended to read "Probe Body 750". Also, element number 750 now correctly points to the entire sensor node. As the Examiner can see by reviewing paragraph 0083 of the present specification, no new matter has been added to the specification. Therefore, it is requested that these specification rejections be withdrawn.

#### **II. REJECTIONS UNDER 35 U.S.C. SECTION 112**

The Examiner has rejected claims 1-14 and 23-47 under 35 U.S.C. Section 112, first paragraph as failing to comply with the written description requirement. Specifically, the Examiner suggests that these claims relied on the matter previously added to paragraph 0083 and Figure 7. The undersigned disagrees with this position. However, in the interest of expediting prosecution, claims 1, 3, 4-11 and 13-14 have

been amended, claims 23-47 have been canceled and new claims 48-69 have been added. It is believed that the presently pending claims more clearly describe the present invention and are fully supported by the specification. In an effort to assist the Examiner, examples of support from the specification will be provided below. It should be understood that these are simply examples and that other instances of support may be present in the specification.

- **Claim 1:**

- See generally paras. 0083-0088.
- From para. 0085: "According to another embodiment, the sensor node is implemented using a separable probe body in order to protect sensitive components during installation of the sensor node."
- Also from para. 0085: "The probe body can be inserted into the soil before the sensor circuitry, formed in the form of a sensor mast 856 is inserted into probe body 854."
- And also from para. 0085: "The removable top part 950 can then be put in place to enclose the sensor node."

- **Claim 3:**

- See generally paras. 0083-0088.
- From para. 0083: "Sensor node 750 also includes a gasket 756 that extends out from the surface of sensor body 751."
- From para. 0085: "Referring to FIG. 8, a sensor node includes a probe body 854 formed with a gasket 852."

- **Claim 5:**

- From para. 0085: "A gasket (not shown) can be provided on sensor mast 952 to anchor the sensor mast to the inner perimeter of the probe body and to seal the space between the mast and the probe body."

• **Claim 6:**

- See generally para 0083.
- From para. 0083: "Sensor node 750 includes a collar 752 extends out from a housing or a probe body 751 of the sensor node for anchoring the sensor node above the soil."

• **Claim 7:**

- From para 0086: "The battery slot is provided in the body of the sensor mast."

• **Claim 8:**

- From para 0086: "In FIG. 10A, the top part of the sensor node includes a PC board housing the antenna, the transceiver and the processor circuitry."

• **Claim 9:**

- From para 0085: "The top part can attach by a screw mount, bayonet type mount, or a flanged mount that allows the electrical connections between the top piece and the probe body to be made automatically."

• **Claim 10:**

- From para 0085: "The top part 850 of probe body 854 includes solar cells formed on the top and a data display and battery slots on the bottom."

• **Claim 11:**

- From para 0085: "In FIG. 9, top part 950 can further include a LCD display (not shown) for displaying operating data of the sensor."

• **Claim 12:**

- From para 0085: "The top part 850 of probe body 854 includes solar cells formed on the top and a data display and battery slots on the bottom. The data display can be an LED or an LCD display."

- **Claim 13:**

- From para 0087: "Referring to FIG. 11, a rectangular probe body 1100, a hexagonal probe body 1102, a round or circular probe body 1104, a triangular probe body 1106 and a cross-beam probe body 1108 are shown."

- **Claim 14:**

- From para 0084: " In the present embodiment, sensor node 750 further includes raised structure 760 for housing the sensor component. The raised structure improves the contact force between the sensor and the soil. The raised structure also improves the stability of the sensor node in the soil."

- **Claim 48:**

- From para. 0085: "The probe body can be inserted into the soil before the sensor circuitry, formed in the form of a sensor mast 856 is inserted into probe body 854."

- **Claim 49:**

- From para 0051: "In one embodiment, the sensor component can be any one of or a combination of: an air temperature sensor, a relative humidity sensor, a light level sensor, a soil moisture sensor, a soil temperature sensor, a soil dissolved oxygen sensor, a soil pH sensor, a soil conductivity sensor, a soil dielectric frequency response sensor."

- **Claim 50:**

- See generally paras. 0083-0088.
- From para. 0085: "According to another embodiment, the sensor node is implemented using a separable probe body in order to protect sensitive components during installation of the sensor node."

- Also from para. 0085: "The probe body can be inserted into the soil before the sensor circuitry, formed in the form of a sensor mast 856 is inserted into probe body 854."
  - And also from para. 0085: "The removable top part 950 can then be put in place to enclose the sensor node."
- **Claim 51:**
  - From para. 0085: "The top part 850 of probe body 854 includes solar cells formed on the top and a data display and battery slots on the bottom. The data display can be an LED or an LCD display. A connection to the sensor mast is also provided."
- **Claim 52:**
  - From para 0086: "The sensor component can be implemented using any suitable sensor types. For example, thin film resistive moisture sensor or thin film capacitive moisture sensor can be used."
- **Claim 53:**
  - See Figures 8, 10A and 10B
  - From para 0086: "In this embodiment, moisture sensors are incorporated in the sensor mast at the bottom of the probe body."
- **Claim 54:**
  - See Figure 7 and para. 0084.
- **Claim 55:**
  - From para 0051: "In one embodiment, the sensor component can be any one of or a combination of: an air temperature sensor, a relative humidity sensor, a light level sensor, a soil moisture sensor, a soil temperature sensor, a soil dissolved oxygen sensor, a soil pH sensor, a soil conductivity sensor, a soil dielectric frequency response sensor."

- **Claim 56:**

- From para 0085: "The top part can attach by a screw mount, bayonet type mount, or a flanged mount that allows the electrical connections between the top piece and the probe body to be made automatically."

- **Claim 57:**

- From para 0086: "The battery slot is provided in the body of the sensor mast."

- **Claim 58:**

- From para. 0085: "The top part 850 of probe body 854 includes solar cells formed on the top and a data display and battery slots on the bottom. The data display can be an LED or an LCD display. A connection to the sensor mast is also provided."

- **Claim 59:**

- From para. 0085: "The top part 850 of probe body 854 includes solar cells formed on the top and a data display and battery slots on the bottom. The data display can be an LED or an LCD display. A connection to the sensor mast is also provided."

## II. PRIOR ART

While the Examiner has made no prior art rejections in the Office Action dated October 24, 2007, the undersigned believes that the new and amended claims are novel over the prior art previously cited by the Examiner.

For example, none of the previously cited prior art (e.g., US Pat. No. 4,852,802 to Iggluden et al.) discloses a wireless sensor probe where the sensor member is configured to removably fit within the interior of the probe body, nor do they show a wireless sensor where the interior of the probe body is selectively enclosable with the top member, as recited by claim 1.

This wireless probe configuration as recited in claim 1 provides many advantages over the prior art. For example, paragraph 0085 of the present applications states:

During installation, probe body 954, without the sensor mast, is hammered or pressed into the soil. After the probe body insertion is complete, sensor mast 952 can be inserted into probe body 954 to complete the installation. In this manner, the sensor node can be inserted into the soil without damaging the antenna, the solar cells, the electronics or other sensitive components on the sensor mast.

In other words, the sensor probe can be easily and securely installed in the soil without out risk of damage the sensitive electrical components. The prior art simply does not show such a configuration. Therefore it is believed that claim 1 is novel over the prior art. Similarly, it is believed that dependent claims 3, 5-14, 48 and 49 are also novel and unobvious over the prior art. However, these claims further limit the prior art and are therefore separately patentable.

In another example, none of the previously cited prior art (e.g., US Pat. No. 4,852,802 to Iggluden et al.) discloses a wireless sensor probe where the component mast is insertable into the opening into the interior of the probe body, nor a probe top selectively engageable with the probe body so as to cover the opening into the interior of the probe body, as recited by claim 50.

This wireless probe configuration as recited in claim 50 provides many advantages over the prior art. For example, paragraph 0085 of the present applications states:

During installation, probe body 954, without the sensor mast, is hammered or pressed into the soil. After the probe body insertion is complete, sensor mast 952 can be inserted into probe body 954 to complete the installation. In this manner, the sensor node can be inserted into the soil without damaging the antenna, the solar cells, the electronics or other sensitive components on the sensor mast.

In other words, the sensor probe can be easily and securely installed in the soil without out risk of damage the sensitive electrical components. The prior art simply does not show such a configuration. Therefore it is believed that claim 50 is novel over



the prior art. Similarly, it is believed that dependent claims 52-59 are also novel and unobvious over the prior art. However, these claims further limit the prior art and are therefore separately patentable.

CONCLUSION


In view of the foregoing, it is submitted that pending claims 1, 3, 5-14 and 48-59 are now in condition for allowance. Hence an indication of allowability is hereby requested.

If for any reason direct communication with Applicants' attorney would serve to advance prosecution of this case to finality, the Examiner is cordially urged to call the undersigned attorney at the below listed telephone number.

The Commissioner is authorized to charge any additional fee which may be required in connection with this Amendment to deposit account No. 50-2809.

Respectfully submitted,

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